

Chapter 2

Lesson 2.1.1 Piecewise Functions

1. Given $h(x)$, evaluate $h(-2)$, $h(0)$, and $h(2)$. $h(x) = \begin{cases} 1 - x^2 & \text{for } x \leq 0 \\ \frac{1}{2}x + 1 & \text{for } x > 0 \end{cases}$

2. Graph. $f(x) = \begin{cases} x^3 + 3 & \text{for } x < 1 \\ 5 & \text{for } x = 1 \\ \sqrt{x-1} & \text{for } x > 1 \end{cases}$

Lesson 2.1.2 Shifting Piecewise Functions and Periodic Functions

1. Let $h(x) = \begin{cases} 2x + 1 & \text{for } x \leq -1 \\ x^2 - 2 & \text{for } x > -1 \end{cases}$. Graph $j(x) = j(x-1) + 2$ and write an equation for $j(x)$.

Section 2.2 Summation Notation

1. Expand. $\sum_{i=2}^5 4i^3 - 1$
2. Write the given expression using sigma notation. $0.4 \left(\frac{1}{2} + \frac{1}{2.4} + \frac{1}{2.8} + \frac{1}{3.2} + \frac{1}{3.6} \right)$

Chapter 1 Review Problems

1. Factor completely.

. $3x^3 - 12x^2 + 9x$

2. Factor and simplify if necessary.

. $(2x-1)^2 - (2x-1)$

3. Simplify.

. $\left(\frac{25}{49}\right)^{3/2}$

4. Simplify the following rational expressions.

· $\frac{5x-2}{2x+3} - \frac{8}{3}$

5. Simplify the following rational expressions.

a. $\frac{a-3}{a^2+2a-8} \cdot \frac{a^2+4a}{3a^2-27}$ b. $\frac{x^3+2x^2}{x+1} \div \frac{x^2+2x}{x^2-1}$

6. Given $g(x) = 4x^2 - 2$ and $h(x) = \frac{1}{2}x + 1$, a solution to $g(h(x)) = 14$ is:

a. $x = 2$ b. $x = \sqrt{7}$ c. $x = \sqrt{8}$ d. $x = \sqrt{12}$ e. $x = 6$

7. Which of the following is equivalent to $\frac{\sqrt{x}}{x^3}$?

a. $x^{-7/2}$ b. $x^{-5/2}$ c. x^{-1} d. $x^{3/2}$ e. $x^{5/3}$